

AVIATION

The Oldest American Aeronautical Magazine

DECEMBER 20, 1926

Issued Weekly

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A Loening Amphibian leaving the deck of the U.S.S. Langley

Underwood and Underwood

VOLUME
XXI

SPECIAL FEATURES

NUMBER
25

BUDGET MESSAGE PROVIDES FOR AVIATION PROGRAMS
FREIGHT CONTAINERS IN AIR TRANSPORT
THE CZECHOSLOVAKIAN SMOLIK AIRPLANES

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With the Editor

With the assembling of Congress for the short Christmas session, each year brings the Annual Reports of the various Government departments for presentation by the President. Such documents, as a rule, make rather dull reading but, nevertheless, they are of very prime importance in their respective fields since they not only set down the program of the past but in a limited extent define the activities of the future.

Space in *AVIATION* does not permit the publication in full of such of these important documents as pertain to aeronautics, but every endeavor is made to bring out the most significant points raised in each case in the form of an abstract or a series of extracts. The President's Budget Message is of such import at this time as to speak for itself, but the very closest attention should also be given to the report of the National Advisory Committee for Aeronautics, by all those who desire to keep pace with aeronautical progress. Guidance in what may be a prevalent belief, the report of this committee is not concerned solely with the "aero" of aeronautics but is given over very largely to a summation of aeronautical progress in all branches, military, commercial and technical.

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CURTISS-REED PROPELLERS

ALL machines competing in the 1926 Schneider Cup Race at Norfolk, Virginia, on November 13th, were equipped with the R-type of Curtis-Reed Metal Propeller.

This new forged type of one-piece propeller has been developed to meet the superlative demands of racing aircraft, and is now available for service use in both military and commercial aircraft.

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The 1928 Budget

THE PRESIDENT'S message to the House of Representatives, transmitting the Budget for the fiscal year July 1, 1927 to June 30, 1928, is undoubtedly the most significant document to date in the history of governmental activities in the national defense and air commerce. Before the close of the last session, Congress passed comprehensive measures to insure reasonably adequate development of national defense in the air in the form of the two-year program for the Army and the Navy, but, at that time, Congress pointed out that there was considerable difference between Congress' estimate of an appropriation and the money actually being appropriated. The present Budget message had, therefore, been awaited with much anxiety and it was gratifying to find that, in most respects at least, the President is ready to back up the recommendations of Congress.

As stated at the conclusion of the part of the message devoted to aviation, a total of more than \$62,500,000 is requested for the air activities of the Government during the coming year. A review of the individual appropriations for the various activities, does not show very startling increases, with the exception of the procurement section for the Army Air Corps. It is felt, however, that the real significance of the present aviation program is not so much in the amount of money involved, although this is of great importance, but in the definite policy which has been adopted insuring wise and complete expenditure of funds appropriated. Thus, by far the most important feature of the air program which became law at the close of the last Congressional session was the outstanding policy embodied and the more sympathetic attitude toward the aircraft industry.

The Air Corps estimate for the coming year is a total of \$33,828,844. Last year's total Air Corps appropriation was \$23,950,000 which includes a supplementary amount for the coming year. For the Navy, the estimate is nothing like so great, the present estimate being \$20,891,000 compared with \$18,550,988 last year. In addition, however, there is added to the 1928 estimate the sum of \$1,800,000 for repairs and provision, provided the two new aircraft carriers are put into commission during the coming year. Of these sums, the Aircraft Industry is to receive \$20,680,000 for new airplanes and equipment for both services.

The question of high two-three air development, however, is by no means satisfied. Before the close of its last session Congress authorized the construction of two \$3,000,000 air field strips, one of which was to be started before July 1, 1928. It also authorized and appropriated \$300,000 for the construction of an all-metal machine of experimental size to determine the practicability of this type. While, on paper, the all-metal principle sounds feasible, it requires proof, and the recommendation in the Budget message for holding up the construction

on the first of the \$3,000,000 air field strips until the all-metal strip principle has been proved or disproved, is absurd. If this policy had been followed regarding airplanes when the credit towards all-metal aircraft was at its maximum, the credit would have been enormous. As we neglect actually air lighter-than-air development because we happen to be spending a small sum on an experiment along new lines, and neglect it for no less than two years, as indicated by the suggestion that the authorized date for starting construction on the first big airship be delayed, if necessary until after July 1, 1928! And all this, in the face of the fact that Great Britain will have two of the largest commercial airships in the world in the near future next year, and Germany, Italy and Japan are proceeding rapidly in lighter-than-air development.

It is such inconsistencies in governmental programs that continue to keep our air defense below the necessary and proper standard, in spite of our superiority in technical development. The Army Air Corps, however, is to continue under an unimpaired leadership, only in this case it is one of personnel. General Patrick, in his Annual Report, emphasized the lack of commissioned personnel and indicated in the same of the shortage that the establishment of provisions, the air must be self-sufficient. Congress directed the Secretary of War to investigate this situation and a report has been made but in the meantime, the Air Corps estimates to provide for commissioned personnel up to the new strength authorized are expected until the service first absorbs the additional officers necessary to bring its aerial strength up to that authorized under the old law. It would seem that money which is thereby used as a result of the temporary retention is unnecessary strength might well be appropriated as additional funds for training in order to provide the necessary officer personnel to bring the Air Corps commissioned strength up to normal.

Undoubtedly, the most important new feature of the President's message is that which deals with the new Aeronautics Budget, Department of Commerce. The budget provides a total of \$4,025,750 for civil aviation, of which \$796,250 is for regular work and \$3,229,500 for the establishment and maintenance of airways and aids to air navigation. All of which may only be regarded as the first definite step the United States has taken to place American commercial aviation on a par with that of Europe. It is in effect a very generous subsidy.

In helping his message to a conclusion, the President indicated his sympathy towards the aircraft industry and the necessity of fostering it to the utmost extent in the interests of national defense. It is to be hoped that this sympathetic attitude will not waver as it has done in the past, and that a true appreciation of the importance to the national defense of a strong aircraft industry will continue to grow in Governmental circles.

Elmer Sperry is Awarded Fritz Medal

A Description of the Sperry Airway Beacon to be Used on the Lighted Airways.

FOR HIS development of the gyro-compass and the gyro-compass for the navigation of ships and airplanes, Elmer Sperry, on Dec. 7, 1926, was awarded the John Fritz Medal for 1925 before a large audience who had gathered at the Engineering Societies Building, New York City, in which the ceremony was presided over by William L. Saunders, Chairman of the Board of Directors of the United States.

This award was made unanimously by the board of members representatives of the American Societies of Civil, Mining and Mechanical Engineers, and the American Society of Naval Engineers, having an attendance of 1,000. The medal is awarded once a year for a notable scientific or industrial achievement.

Elmer Sperry, engineer and inventor, was born in Corbush, N. Y., Oct. 15, 1859. In 1880, after a successful career in the electrical industry, he joined the Sperry Gyroscopic Company, of Chicago, and from that time the present has been identified with aviation progress in the instruments, gyroscopic and other instruments. Thirty years ago he turned his attention to the gyro-compass, which is now recognized as one of the greatest inventions of modern times.

Shortly after the construction of the first gyro-compass, Mr. Sperry became interested in aerodynamics and had printed several aerodynamic curves in use in the aircraft industry. In 1915, he was awarded first prize by the Aero Club of America for his airplane stability chart, which was designed by Mr. Sperry and which was capable of lifting a target 160 miles away.

In presenting the John Fritz medal, Mr. Saunders told his audience that the American government of the United States of an aerial torpedo which was designed by Mr. Sperry and which was capable of hitting a target 160 miles away.

The Aerial Torpedo

Mr. Saunders spoke of Mr. Sperry's experiments during the war at Georgetown, L. I., on some German ZN planes, which the navy later showed complete automatic control with a high degree of efficiency at a target thirty-five miles distant. The torpedo was a self-propelled missile, then automatically fired off by the ship, with automatic guidance with a high degree of precision, and when the predetermined miles and fractions had been traversed, turned and flew nearly downward. Each of these torpedoes carried a large charge of TNT, with sensitive contact fuse.

The Sperry Beacon

The Sperry airport and airway beacon, employing a Sperry high intensity arc, and fitted with a directional lamp, radiates a beam of 20,000,000 candle power, covering more than 60 acres, has been selected by the Department of Commerce as standard for illuminating the air routes.

An order for 50 Sperry 24 in. beacon lamps is being placed with the Sperry Gyroscopic Company,

of Brooklyn, N. Y., after extended experiments and tests covering airway lighting by Sperry engineers, in co-operation with the Army.

The Sperry revolving beacon lamp is for airports and airways is made in two sizes, 24 in. and 36 in., using incandescent lamps of various voltages. The 24 in. beacon draws power directly from the 24 in. hot line in standard. The entire beacon is waterproof and drip-proof. The beacon is usually mounted on a tower or tower of sufficient height so that it will be above surrounding obstacles. Usually 40 to 50 ft. is sufficient. Sperry beacons are visible to pilots from distances of 25 to 60 mi.

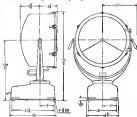
Construction of Beacon

The drum is supported on the transverse arm by two aluminum rods so that it may be set at any desired angle of elevation and clamped in that position. The drum consists of a metal casting, the upper drum and drum sides being set in one piece, forming the desirable combination of light weight and saving in strength and protection in the optical system, combined with a very neat appearance. The reflector used in this beacon is a flat glass, ground and polished silvered glass cylinder.

There is mounted in the front part of the drum, a door, consisting of three sections of flat, metal plate rings mounted in six aluminum alloy ribs. In the closed position, the front door flap is clamped to the drum by means of six notched clamps which cause the door flap to set itself about the drum in compression a rubber socket which is mounted in a groove in the door rim. In the closed position, the drum is completely weather-proof.

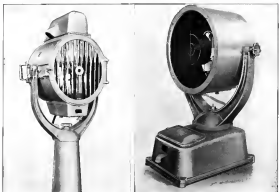
The Operating Motor

The transverse arm is of aluminum alloy and are set out in two parts, the rear part being a support for the drum. The base is stationary, consisting of a base flange and housing casting, both of aluminum alloy. The base contains a motor, worm and worm gear and slip rings. The base also houses



General design of the Sperry 24 in. beacon pump

the upper and lower ball bearings in which the revolving shaft of the rotating drum and transverse arm are seated. This shaft in part of the transverse arm shaft, which also serves as screw to keep water from entering the base through the transverse arm bearing. Copper carbon brushes are used



On the left, a Sperry 30,000,000 candle power beacon lamp light capable of illuminating 50 acres. On the right, a Sperry beacon lamp 24 in. in diameter.

for making contact to the slip rings. A copper carbon worm shaft with a cast iron worm gear for transmitting the motor drive to the transverse arm. This combination is self-lubricating. The base has a handle in the top through which the motor and starting are accessible. The handle is normally secured with a cast aluminum lock-down cover which is easily accessible.

The standard lamp used in a 1000 watt, 110 volt, T-30 projector type incandescent lamp. A 500 watt, 30 volt lamp may also be used, if desired. Both lamps will operate either alternating or direct current.

The beam could pivot of the 18 in. and 24 in. beacons range 2000 feet. The 24 in. lamp, a 1,000,000 and 2,000,000, respectively. A lamp pre-setter and spare lamp socket are supplied with each beacon. A new lamp may be pre-set in the spare lamp socket by use of the pre-setter and when the lamp is in the socket can easily be removed after the spare lamp is in place without necessity of turning adjustments in the drum. In addition to the spare lamp socket and pre-setter, a spare set of slip ring brushes, motor brushes and a spare carbon worm gear are provided.

Automatically Changes Lamps

An automatic lamp changer may be provided with the beacon if desired. Two lamps are mounted in each lamp holder. Each lamp is pre-set in a socket by means of a lamp setter and the unit is then set into a base. Two beacons are carried as a spare lamp. The platform has two normal positions. Position No. 1, held by a latch, is so arranged that the filament of the spare lamp is at the door of the reflector. The lamp moves the platform to the door position. No. 2, the normal lamp position, in position No. 2, the spare lamp position. When lamp No. 1 is in the form of the reflector, it starts in a normal position. When the lamp beam is a filament automatically trips the latch, causing the platform

to tilt to position No. 2. The lamp door opens lamp in the form of the reflector and at the same time closes the contact switching current to the spare lamp.

Weight is an important item in take into consideration when purchasing a beacon. Beacons known as usually of light construction, and the first weight is 100 lbs., the second, roughly in weight. Also when placing an airway beacon bear in consideration of necessary counter, light weight is of great importance. The performance must be considered. The net weight of the Sperry beacon is only 150 lb., gross weight 200 lb. The 24 in. beacon is 120 lb. net, 200 lb. gross.

Boettner Receives Detroit News Trophy

The Detroit News before news trophy has been presented to John A. Boettner, of Akron, Ohio, a pilot of the Goodrich Tire & Rubber Company's newsroom organization, who was winner of the last race, from Dearborn Airport, open road by the Detroit newspaper. The race was held on Aug. 21. With the acquisition of the Detroit trophy, Akron balloon pilots are held all the major following trophies in existence, including the new Goodrich trophy, the Littlefield trophy for the National Balloon Race in the United States, the Mayor Thomas trophy for the balloon race at 10,000 ft. in diameter, and the Ohio Flying Club trophy for the balloon race.

Boettner is a veteran balloonist having made more than 1,000 flights in the last 10 years. He was a participant in the 1925 National Race from Little Rock, Ark., making a place on the International team representing America in the race this year for the Gordon Bennett trophy. He will probably appear as a balloonist in the national event to be started from Akron next Spring.

Freight Containers in Air Transport

Problems in Handling of Loose Packages—the Advantages of Using Containers—Reduction of Claims for Damage or Loss—Simplification of Handling and Loading.

By ARCHIBALD BLACK
Air Transport Engineer

PRESS REPORTS announce the closing of an agreement between the American Railway Express Company and National Air Transport Inc. Obviously, this is only the first of many such contracts. For air transport in the United States is about to embark upon the service of package men on a large scale. Operating problems have been solved and the routes now running have demonstrated their viability. On every previous occasion the American Railway Express Company refused its assistance to take an active part in any single of various handling all of the collection and delivery of the packages. Naturally, with its tremendous facilities already in use, and capable of immediate application to this work, it would be a disappointed operator who ignored such an offer and attempted to create his own collection and delivery system. It seems safe to assume that all of this work will fall to the American Railway Express Company in the local service of routes. In such case, the operators of air transport routes will be free to devote their attention to actual operations.

Present Methods in Handling Packages

Up to date, only a small quantity of material has been carried by air and in the form of packages in the United States. In cases where these packages were shipped by air mail, this meant that they were handled in great numbers and, thus, could be quite conveniently managed for in the way through. However, the development of a substantial quantity of express traffic will bring a greatly increased number of packages, and the type of package may change somewhat. Instead of having only the smaller packages, which are usually capable of being carried in position, the operator will find that he is called upon to transport a varied assortment ranging from very small to quite large packages and

from light to fairly heavy ones. Any attempt to handle these loose in to deliver as specimens available to handle. This trouble will take the form of claims for losses (particularly in the case of small packages) and from the damaged material in transit. For many of the packages will be light and fragile, while others will be heavy and not easily damaged. When such an assortment is handled and packed independently into the cargo space in an airplane, trouble is bound to result. Some of the heavier packages will crush the fragile ones with movements of the airplane, if not merely through their own weight.

Applying Other Transportation Experiences

It would seem logical in the case to investigate the practices applied in other forms of transport. The custom of the express companies, until order boxes, department stores and



A diagram illustrating how freight containers may be loaded into the hold of a big passenger and freight carrier.

merchants has been to resort to the use of crates or bangers for the handling of various assortments of packages. This method, therefore, seems to be the logical course to be followed in the development of package-carrying by air on a large scale. Instead of handling a large collection of small packages of all sizes, shapes and weights, along with fragile, all indiscriminately mixed, the packages can be sorted to some extent in the central place in the case where they originate. Here, they can be packed into containers such as crates, bangers, plastic boxes or such. The light and small packages are placed in one container and the heavy ones in another, the fragile packages may be separated and placed in still another. If the route is a long one, the packages may perhaps require some distribution. Some may have to be left at a way stop, others may go to the end of the route or may even be consigned by another air transport line. In each of these cases, providing that the traffic volume justifies the problem may be placed in separate containers. The containers used, then, be loaded before they leave the express company's direct track, from that point on, they can be handled and reloaded as needed and loaded units.

Loose Packages as a Source of Trouble

In this way nothing can be accidentally lost and pilfering becomes reduced to a minimum, for pilfering necessitates deliberate breaking open of a container—something impossible in the handling. Think of all of the packages and paraphernalia necessary in current mail, loose, packages by air and all of the opportunities offered for damage or loss. First, they are loaded on trucks and, next, carried to the flying field where they must be unloaded and classified. Then they must be loaded manually and one at a time into the cargo space in the airplane. Some effort must be made to place the heavier or more fragile ones on the top of the pile and to place the heavier ones near the center of gravity of the airplane. This effort seems as hopeless that

one wonders if it might not be as well simply to throw everything in as it comes and then hope for the best!

However, the aerial package express's troubles have just begun here. For the whole job must be repeated at the destination and the packages for that landing packed out. One more the cargo space is loaded up, the cargo manifest is made, they get out and everything has to come out at that field. Perhaps they did. Perhaps they went further and took off also some packages that should have gone through to the next stop. What a life air express is going to be if this system is retained!

Preventing Movement of Loads

The trouble described happens at every stop and again at the end of the route the packages must be loaded from airplanes to trucks and carried into the city. Continuing the difficulty lies in carrying the added weight of package containers



A diagram showing of what can be expected if containers are not employed in the carrying of freight by air. The material of the plane and other packages and box and bangers will wear.

should be well worth while. The loss of an occasional package might be offset, and the handling of the greater proportion of leaving the hold safely badly in flight and throw the airplane out of balance. With the containers in use, it becomes a simple problem to place the heavy containers over the center of gravity and a single method to prevent accidents in flying with partial loads. The crew merely fills the lowest space with empty containers and nothing can move around in flight. That, number of the operator's problems may be solved.

An Ultimate Necessity

These questions have frequently been discussed with experienced package transportation men, with express operators and with the operator group. All favor the container system. Some insurance people went so far as to say that the requirements will "demand" such a system in time. And, what is more, they backed this up with a promise that an airplane would have a great effect upon cargo insurance rates. While air express is destined without special equipment, this is according to the airplane operator to think about now. For, as soon as an traffic grows, he should find it well worth adopting. At this time the system may be applied to the facilities of his existing airplanes. Later on, with improved traffic, special types of airplanes may be required. Perhaps in the future the operator will use one model of airplane ex-

clusively for express, another for passengers and still another for mail. Then the container system can be utilized to its fullest advantage. That, in the opinion of the writer, is the only applying equipment by modifying existing airplanes to meet great necessities.

Chicago-St. Louis Air Mail Schedule Changed

W. Irving Glover, Second Assistant Postmaster General, has announced a change in the flying schedule on the contract air mail route running between Chicago and St. Louis, Mo. The full text of the Department's announcement follows: Contract Air Mail Service, Route C-A-M-16—Effective December 1, 1936, the frequency of service on the contract air mail route from Chicago by Post and Springfield, Ill., to St. Louis, Mo., will be daily except Sunday, Monday and National holidays, and daily except Saturday, Sunday and National holidays northward.

Atlanta-Miami Air Mail Schedule Changed

A change in the flying schedule on the contract air mail route between Atlanta, Ga., and Miami, Fla., to allow for certain connections with mail routes for Chicago and New York City, and of Atlanta, has been announced by W. Irving Glover, Second Assistant Postmaster General.

The schedule is as follows:
Effective Dec. 1, 1936, C-A-M-16 (Northwest Time):
Leave Atlanta, 7:30 a. m.; leave Miami, 5:30 a. m.; leave Jacksonville, 11:30 a. m.; leave Tampa, 1:00 p. m.; leave Port Myers, 2:30 p. m.; arrive Miami, 4:45 p. m.; leave Tampa, 7:00 a. m.; leave Port Myers, 8:30 a. m.; leave Tampa, 10:30 a. m.; leave Jacksonville, 12:45 p. m.; leave Miami, 5:30 p. m.; arrive Atlanta, 4:45 p. m.

There will be no change in frequency of service.

Air Mail Postage Ten Cents Half ounce

In accordance with regulations previously announced in Air Mail, it has been decided to make a flat air mail postage rate of ten cents a half ounce over all air mail routes, effective Feb. 1, 1937.

Following the receipt of a telegram from Second Assistant Postmaster General W. Irving Glover, from Portland, Ore., Postmaster General has revised the statement to this effect: "When it was made known several weeks ago that such a rate was being considered, it was stated that it was the Department's intention to leave the various air mail contractors."

Waterman Company Advertises Air Mail

Beginning Nov. 1, the L. B. Waterman Company's air mail poster was distributed through the country as a campaign for increasing the use of the contract air mail transportation for mail matter.

The illustrated ad poster is in eleven sizes and carries a map of the United States in which the air mail routes are shown and color-coded. Transcontinental air mail, foreign air mail, contract air mail routes and air mail under consideration are indicated by a watermark color key on the map. Across the lower half of the poster is illustrated the Waterman Mail System plan.

Over 1400 of these posters will be in display. The larger distribution of them is in Chicago, New York, and the 135, Franklin St., Los Angeles 66, San Francisco 66, New Haven 44, Chicago 136, Indianapolis 66, Minneapolis 44, Baltimore 44, Boston 44, Detroit 44, Manchester 44, St. Paul 44, Kansas City 44, St. Louis 44, Denver 44, St. Paul 44, Minneapolis 44, Cleveland 44, Philadelphia 44, Pittsburgh 44, Providence 44, Milwaukee 44. The balance are distributed to the cities in a proportion computed from their size.

The Post Department and the Associated Chamber of Commerce of America, Inc., co-operated with the Waterman Company in this campaign, believing that it will prove a stimulus to air mail traffic.



The inside of the fuselage of the Sikorsky S-35 type giving an excellent view of the space available for freight in a modern transport plane.



FOREIGN AERONAUTICAL NEWS NOTES

By Special Arrangement with the Automotive and Transportation Divisions, Bureau of Foreign and Domestic Commerce

Greeks Buy Training Planes

The American Consular Attaché at Athens reports that a committee was recently appointed to study and decide on the best type of training plane to be purchased by the Greek Government for the Army. The appointment of this committee was the result of the Blackburn airplane factory at Plymouth, Greece, being unable to supply the required number of training planes at the present time.

The committee, after having studied the different categories, decided that the Morane-Saulnier airplane of the "pursuit" type, manufactured by the Morane factory at Lezard, France, was the best for the needs of the Army. The number of planes to be purchased is stated to be twenty-five. Delivery will begin within four months from the signing of contract.

The committee also decided that the existing contract between the Greek Government and the Blackburn airplane company should be modified so as to enable the latter to supply the Greek Government with lower priced airplanes; and that all orders of the Government should be placed, as of about July 1, 1937, with the Blackburn factory at Plymouth.

Scandinavian Aviation Day Held at Malmo

The celebration of Scandinavian Aviation Day took place at Malmo, Sweden, Sept. 5, and the events and tournaments were witnessed by 30,000 people who assembled at Dalhalla Park, in the suburbs of Malmo. The purpose of the demonstration was to show the advanced aviation in Sweden and to arouse the public interest in commercial aviation.

The Swedish military aerial units and the Norwegian Marine air force were present, as well as numerous commercial air organizations from Scandinavia, Germany and Holland.

The contest was officially opened by General Rydman, commander of the Swedish Army Air Division, and presided over by the Swedish Director of the Swedish Army Club, who also acted as official speaker to the public. The exhibition opened with an air review participated in by thirty-one planes. This was followed by an exhibition of military and naval flying by the Swedish and Norwegian military air units.

Other events of the day were automobile and short racing, a relay race between five military planes. Trophies of various kinds were offered by firms and organizations for pilot, flyer, military and aviation flying, relay race and other events.

Brazil Enters Air Line Activity

An air line between Manaus and Belém (Brazil) has been authorized by the State of Amazonas. Calls will be made at intermediate points. The question of the line will be one Felipe Simoes. No further details are, as yet, available regarding this route.

Japanese Air Mail Trials

A trial air mail route has been established between Osaka and Berens, under the auspices of the Japan Aeronautical Association, according to unofficial reports. The route included via Osaka and Hiroshima, in Japan; Seoul in Korea; and Utsunomiya. For the present, however, planes do not land at Utsunomiya, but at Tokyo on the South Manchurian Railway, approximately midway between Dairen and Port Arthur. Entry is planned to have the mail planes use the new landing field at Choshiu, 50 miles Northwest of Dairen. Although the first trips of the mail planes appeared successful, a regular service has not been decided upon.

Danish Company's Aircraft Sales

Several orders have been received by the Rolabek Metal Airplane Factory of Copenhagen from the Turkish Army during the past summer. Several of the airplanes ordered have been completed, eight tested, completed and shipped to Constantinople.

The factory is sending one of its officers and a number of workers to Constantinople to assemble the machines. From that point they will be flown to the Turkish mainland at Smyrna by sea on the Rolabek Company's boats.

German Aviation Statistics Show Increased Traffic

Statistics showing the accomplishments of German aviation during the five-month summer season April-August 1936, which have just been made public show that planes of the Luft-Hansa A. G. covered 4,000,000 km. and moved 54,000 passengers, 600 metric tons of luggage and 450 metric tons of postal matter plus letters that period.

In passenger and freight, this total is already an increase over 1935. In respect of passengers, figures are compiled on a rounded scale below, that is, rounded at each end every point of departure, even though travelers went on and made several such points in one day. Considered as a stream, more shadeless than, there were only 37,305 passengers carried between April and August, 1936.

Thus, for the last time, German aviation is to keep up its winter service. Interest is being displayed in Germany concerning the degree of regularity that will be maintained on difficult stretches such as the night routes to Kopenhagen, East France. For both passengers and mail this is not to be one of the most troubled of all lines. Another stretch which, during the summer, gave great satisfaction was that from the Rhine to the North Sea islands. The highest daily mileage flown by the Luft-Hansa planes during the period covered in this report was 32,144 km. as against 30,174 km. in 1935.

Turkish Airplane Factory

The Turkish press reports that the first issue of an airplane factory belonging to the Turkish Airplane and Motor Company, Inc., was held at Ankara on Oct. 6. The Minister of National Defense delivering the address for the occasion. The new enterprise is generally understood to be a German-Jewish enterprise, operating behind a Turkish screen. The head of the concern is Refik Bey, Deputy for Kaim and vice-president of the Red Crescent Society. Professor Paulson is understood, regarding that the state of his health did not permit of his being present at the inauguration of the factory. The undertaking is believed to be a success on account of its German affiliation. One of the planes completed from Ankara in Germany for the Turkish service had a forced landing and caught fire but it is reported that no lives were lost.

Aviation Subsidy Requested in Sweden

In its petition to the Riksdag, the Swedish Aviation Board has requested an extra appropriation of 2,500,000 kronor for the fiscal year 1937-1938 to meet the expense of establishing a training factory for the manufacture of airplane engines.

Finland Admits Airplanes Free of Duty

A Finnish law, which went into effect on Sept. 28, admits airplanes imported for passenger and mail transportation, imported into Finland during 1936, free of duty.

Guggenheim Fund Assists Michigan University

Gives \$75,000 to Complete Aerodynamic Laboratory and Creates Chair of Applied Aeronautics

HARRY F. GUGGENHEIM, president of the Daniel Guggenheim Fund for the Promotion of Aeronautics, announces the following:

Appropriation of \$75,000 for completion of the Aerodynamic Laboratory and for the establishment of the Daniel Guggenheim Professorship of Applied Aeronautics at the University of Michigan, Ann Arbor, Mich., has been authorized by the members of the Daniel Guggenheim Fund.

Of the approximately \$25,000 will be used to complete laboratory apparatus and to construct new testing and research apparatus. The remainder of the appropriation will be paid in installments of \$5,000 a year over a period of six years for the establishment of the professorship.

In accepting these appropriations President C. G. Latta, of the University of Michigan, said:

"The University of Michigan not only acknowledges its own indebtedness to the Daniel Guggenheim Fund for the Promotion of Aeronautics, and expresses its appreciation that these funds will permit an earlier completion of long-deferred plans than would otherwise be possible; but also, as a state university, maintained by the proceeds of taxation, it appreciates hereby the public-spirited efforts of the Daniel Guggenheim Fund and its officers to promote studies of fundamental importance to the whole nation and to air educational institutions in making their contribution to the solution of these problems."

In previous times courtesy to the University of Michigan's membership of the Daniel Guggenheim Fund had in mind the rapid development of aviation at Michigan and the adjacent territory. Last summer, the Guggenheim Fund gave approximately \$100,000 to the College Institute of Technology and Lehigh University for the development of their aerodynamic laboratories, both in its equipment and personnel. This provided research facilities of international importance of the West to supplement the work being done at the West at Massachusetts Institute of Technology and at the Daniel Guggenheim School of Aeronautics at New York University. President Latta, in a memorandum to Harry Guggenheim, explained the use to be made of the funds just granted to the University of Michigan, as follows:

"The fund for the laboratory will enable the University, not only to complete the necessary work to be done in the present wind tunnel, but also to install a good deal of new equipment, so that when it is completed, almost any type of research or experiment may be carried out upon models of aircraft or propellers or as fast upon any problem relating to aerodynamics."

"In the original design of the wind tunnel, provision was made for the installation of some of the equipment of some other type, but the above gift enables this to be made possible, as is now in the various instruments now in design and built. The additional professorship, which will carry the title of the Daniel Guggenheim Professor of Applied Aeronautics, will greatly strengthen the present staff."

"The field of commercial aviation has introduced a large number of new problems which will require much consultation and research for their solution. The whole field of the economics of transportation as applied to the air, has yet to be solved. The question is one of utmost importance."

(Continued on page 1092)



THE CURTISS HAWK ARMY PURSUIT PLANE

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Colonial Air Transport Buys Passenger Planes

Four four-engines, medium cabin, 35-passenger air liners, each powered with three 260 hp. Wright Whirlwind six-cylinder engines have been ordered by the Colonial Air Transport, Company, operators of U. S. air mail routes, C.A.M. No. 1, between New York, Hartford and Boston. May Gene John F. O'Hara was recently elected president of the company.

These planes, which will be delivered during the Winter and early Spring, are being manufactured by the Fisher Aircraft Company of Hingham, England, No. 1, and the Ford Motor Co., at Dearborn, Mich. The first of these planes will be delivered Nov. 15.



May Gene John F. O'Hara (left), president of Colonial Air Transport, Inc., being greeted by J. Irving Duffell, chairman of the Executive Committee, on arrival at Oyster Bay from New York in one of the new Colonial Air Transport Fisher biplane planes.

The approximate value of this equipment will total \$250,000. The planes will be equipped with the most modern aeronautical instruments, including the Pioneer North Indicator compass, which is electrically operated, the current being generated by means of an air driven dynamo. The newest radio equipment will also be installed.

During the past few months, the Bureau of Aeronautics has selected the Long Beach to California, New England and New Jersey routes to equip in the technical development of new navigational facilities. In these tests, data on the value of ground aids, fractional compass systems to guide aircraft at night and winged fuel, rope and cloth was also secured.

A 2500-hp. night landing system is now being installed on the Boston to New York route. This equipment is being installed in cooperation with the Department of Commerce, under the direction of Assistant Secretary of Commerce for Aviation William P. MacDonogh, Jr.

Morrell-Albers Air Line

A new air line from Minneapolis to Alamosa will be put into operation by the Compañia Aeronautica Franco-Americana in some months. This publicly owned line was started in April. This company, the new line has been under way for some time and has proved successful.

P. R. T. Air Service Suspended

The Philadelphia Rapid Transit Air Service, which started July 3 on the Philadelphia-Washington route, later extended to Norfolk, Va., suspended operations on Nov. 30, bringing to a close one of the most unusual experiments in the possibilities of commercial aviation.

This service was inaugurated primarily in connection with the Bieng-Congressional Conference and, as such, more to a close with the exposition. It was sponsored by the Mayor Management of Philadelphia, which announced that a suspension of the service may be expected in the Spring. Night lighting, weather report service and radio communication, necessary in extended Winter flying are facilities at present lacking on particular route, and permission was granted by the Postmaster General to suspend operations under the air mail contract.

The type of plane used in the P.R.T. Service, which carried passengers in addition to mail, was the Fokker, equipped with three Wright Whirlwind 260 hp. engines. Three of these planes were employed carrying 3,000 passengers and averaging a distance of 90,000 miles. Only 57 trips were made at the \$75 scheduled. These interruptions were due to weather conditions.

The Fokker plane is operated by the P.R.T. crew of the standard three-engine monoplane type, with a capacity of eight passengers and a crew of two. The most modern type of navigation instruments, including the Pioneer North Indicator compass, were installed in the cockpit. During the early Atlantic, facilities obtained in the interest of one of the time savings supplied left to the passenger cabin.

There was two flying schedules during the time the service was operated. The first plane left Philadelphia, Pennsylvania, at 9:30 a.m., arrived in Washington at 10 a.m., left Washington 10:15 a.m., and arrived in Norfolk at noon. Additional planes left Philadelphia, Pennsylvania, at 10:15 a.m. and 3:00 p.m., arrived in Washington at 11:05 a.m. and 5 p.m. respectively. On the northbound schedule the plane left Norfolk daily at 1:30 p.m., arrived in Washington at 3:25 p.m., left at 3:30 p.m. and arrived in Philadelphia at 5 p.m. Later planes left Washington at 6:00 a.m. and 2 a.m., arrived in Philadelphia at 10:15 a.m. and 3:00 p.m. respectively. The round trip fare from Philadelphia to Norfolk was \$25.00, with a stop-over privilege, and the one way fare was \$15.00. The round trip fare between Philadelphia and Washington, including a stop-over privilege, was \$25.00 and the one way fare was \$15.00. From Washington to Norfolk the round trip fare was \$25.00, with a stop-over privilege, and the one way fare was \$15.00. The cost of express was twenty-five cents per lb., with a \$1.00 minimum charge for any one package.

A report of the first three months' operations of the P.R.T. Service was published in the Oct. 26 issue of *Aeronautics*.

On Dec. 1, Thomas K. Malin, of the Mayor Management, in a letter sent to Secretary of Commerce Hoover, requested the approval by the P.R.T. with the cooperation of the United States Government, of six more lines between New York, Philadelphia, and New Orleans on new routes and flights and Atlantic on schedule.

Mr. Malin quoted in his letter statistics covering the operations of the P.R.T. during the Bieng-Congressional and of need to begin service in the Spring.

Guggenheim Fund Assists Michigan

(Continued from page 1941)

Importance today, involving, not only engineering and scientific problems, but also those factors which determine successful and economic operation, and these latter in turn open up new problems for the engineer.

"The course in Aeronautical Engineering at the University of Michigan was started about ten years ago, and it was one of the regular four-year courses leading to the degree of Bachelor of Science in Engineering. From the start it has been the aim of those in charge to give the students a thoroughly high grade course in both in production they will be properly trained to have gone with this rapidly advancing new branch of engineering.

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The Czechoslovakian Smolik Airplanes

Aviation in Central European State Shows Marked Progress with Production of Military, Commercial and Racing Planes.

DURING THE past year or so, the nation of Czechoslovakia in central Europe, has taken to aviation in all current and had not only developed some fine plans but has been responsible for the production of some really fast class airplanes, several of which are about to be developed here. There has been quite a little sporting air activity originating in Czechoslovakia during the present year also, including the race for the President's Cup, a contest for speed and maneuverability, including short flying at Brno, the Tour of the Republic in a day, etc. Each of these events was won by the single-seater Smolik Type S-30 with 200 hp Hispano-Suiza engine. In the President's Cup race, the Smolik S-30 took first and second places, while in the Tour of the Republic, which was also won by the plane of this type, the 1190 km. (740.2 miles) was covered at a speed of 225 km/hr. (139.7 m.p.h.).

As already stated, the Smolik S-30 is a single-seater biplane designed for general military work. The wings are constructed of wood, fabric covered, while the fuselage is of steel bent assembled as such a structure as to make production and repairs convenient. The engine, under a cowling which completely covers the cylinder heads, can be quickly dismantled by the removal of but four bolts and the engine leaves an especially arranged to take the 200 hp Hispano-Suiza engine in place of the 300 hp engine.

The cowling is an integral lightness with a single latrine pipe and the top wing arranged on a level with the pilot's eyes. Not only is the lower wing of shorter span than the upper plane but its chord is considerably less, in order to enable to give a range of vision for the pilot as possible. The wing structure is of the conventional form with two main spars. In the lower portion of the upper wing, a probe-like, is arranged as its main spar (and holds sufficient fuel for 20 min. flight at 200 km/hr. (124.7 m.p.h.)). The main fuel tank is situated in the fuselage at the center of gravity and has a capacity sufficient for 2½ hr. flight. The landing is satisfactorily back of the engine and behind it is the cockpit, which is more comfortably arranged and is completely equipped with navigating instruments on the dash. The

arrangement consists of two machine guns firing through the propeller.

The airplane is said to have excellent flying qualities and is very much liked by service pilots as a fighting plane. It is a standard fighter employed in the air service of both the Czechoslovakian and the Latvian air forces. The plane is reported to be capable of a maximum speed of 275 km/hr. (171.4 m.p.h.) carrying a load of 320 kg. (707.2 lb.), with a minimum speed, presumably landing speed, of 120 km/hr. (74.6 m.p.h.). This check is at follow:

Top speed	275 km/hr.	171.4 m.p.h.
Minimum speed	120 km/hr.	74.6 m.p.h.
Maximum load	320 kg.	707.2 lb.
Maximum speed	225 km/hr.	139.7 m.p.h.

The Smolik S-8

Another highly interesting Czechoslovakian plane is the Smolik S-8. This really is the first purely racing airplane ever produced by the Czechoslovakian aircraft industry and as such it has a remarkable performance. As will be seen from the accompanying photograph, the machine is a high wing monoplane with a fuselage of somewhat similar construction to that of the Smolik S-30. The engine is a Napier Lion of 450 hp. The top speed is officially reported as 325 km/hr. (201.9 m.p.h.) although the plane has actually done from 325 to 340 km/hr. (201.9 to 211.2 m.p.h.). It has a ceiling of 5000 m. (16,404 ft.).

The Smolik S-25

Another product of the Smolik Company is the S-25, a training plane with dual control and a 50 hp. Walter motor, air-cooled engine, a type which has proved its reliability on a number of long distance flights during recent months. The Smolik S-25 is constructed not only in Czechoslovakia, but also in Belgium and Greece under license. It is a biplane of very simple wood construction throughout, enabling cheap production and ease of repair and maintenance. The plane is equally satisfactory for gliding in order the front or the

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The Smolik S-30 pursuit plane (Hispano-Suiza, 300 hp)

Air Corps Make Altitude Flight Tests

Since Aug. 27 the 56th Observation Squadron, B. C., at Langley Field, Va., has been conducting series of tests on 200-600 hp. airplanes, which are specially 120-612-2 planes, equipped with four "P" turbo superchargers.

On the first tests, the superchargers are installed on both planes erected with open and closed to the McCook Field for examination and repair, but no record trial so far further trouble was experienced with the superchargers. A total of ten flights have been made to date, two of which were successful. All flights thus far have been without success, although attempts are now being made to get superchargers fixed.

In a test on Oct. 26, Capt. William B. Francis reported some trouble, the result of which has not yet been ascertained. The investigation to date has developed that the engine became hot without indicating this on any of the three thermometers and began to smoke badly at an altitude of 5,000 ft. Captain Francis thought the engine was on fire and landed his plane in a small field near Popo, Va., without damage. The pistons examined were under great pressure before the engine was started. A strong wind from the West was reported in all tests.

Cadet Harold A. Whelan and other pilots engaged in these tests passed through a thin layer of clouds at an altitude of 15,000 ft. When it reached 25,000 ft., the plane was brought down, passing through these cloud layers and landed out of fuel at Cape Charles, across the Chesapeake Bay from Langley Field. A landing party was sent to start in quest when the pilot had no experience.

It is the general feeling among pilots who have taken part in these tests that, where engine equipment is installed, a maximum altitude of about 20,000 ft. can be expected of these planes.

Accused 24,000 Ft. Without Oxygen

C. O. Perry, of the Air Corps, Engineering Division, and Capt. Clifton T. C. Dabson, flight surgeon, at Wright Field, flew to an altitude of 24,000 ft. on Dec. 7, without resort to oxygen. The plane used was a DH.

Captain Dabson's purpose in undertaking the flight was to determine the effect of this airplane on his human body. It is 24,000 ft. he took his own pulse, but after passing this altitude he was unable to read the pulsation of his heart correctly and experienced difficulty in changing his position in the cockpit.

Aerial Photography School at Chanute Field

An organized, present, the photographer school, maintained by the Air Corps Technical School, at Chanute Field, Kansas, 13, graduates 345 cadets each year, a new class of twelve men entering each succeeding month. The length of the course is twenty-four weeks.

In addition to the course for cadets, there is another, these twelve men, beginning on the first of March of each year, for a class of twelve men, composed of officers from the Reserve Corps and National Guard. There is also a class for twelve officers of the Air Corps, Regular Army, the length of the course for this class being thirty-eight weeks.

The course for cadets, which is the basic photographer course, includes the mathematics involved in photography, the principles of photography, superimposing process, lens-like coating, photographic optics, anatomy, practical ground photography, including airmanship and commercial photography, mapping, film, the work of a photo section and maintenance.

In the training of officers to become photographer pilots and observers, the school runs a series of training pilots for the language which involves flying in only of the most valuable nature. The type of picture required in the shape of aerial and multiple low altitude for mapping purposes is of a most extreme nature, requiring months of constant practice and study. When flying a machine of this type it is often necessary to fly perfectly straight lines.

The reason for numerous officers of the National Guard and Reserve Corps include all the subjects mentioned above with the exception of mathematics and with the addition of practical aerial photography, the military use of aerial photography and photomontage interpretation and aerial intelligence. In the course for the regular officers, more time is devoted to aerial photography, the cadets receive instruction in practical aerial photography for a period of 300 hr. Sixty hours are devoted to instruction in elementary photography, 75 hr. in photomontage interpretation of aerial intelligence, 6 hr. in the military use of aerial photography and 3 hr. in the administration of a photographic section. In all other subjects the course is the same as that for the cadet students.

Air Corps Night Flight Across Panama

According to reports just received by the War Department, the first round trip night flight across the Isthmus of Panama was recently accomplished by two Army Air Corps pilots.

Two Lockheed planes, equipped with radio and night

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The new Sonoma Detachable is being used by Florida Airways on their new air mail and passenger route to Atlanta, Ga. Similar ships are being used by North Western Airways Inc. on the Chicago-Minneapolis air mail route. Comfortable accommodations for pilot and three passengers including a separate mail compartment are provided within the closed cabin. Send for Bulletin No. 8.



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